REPORT OF FINDINGS

The following tables summarize the results of computer modeling for four (4) ambient signal strength values.

The 120 dBu (1 Volt/meter) value was chosen as the maximum possible ambient which might be present under conditions of signal reinforcement from reflections, and at locations in the immediate vicinity of high power transmitter facilities.

In practice, broadcast design engineers try to keep the maximum radiated signal level to 100 dBu for VHF-TV and below 80 dBu for UHF-TV. An analysis of measured vertical patterns and the resultant estimated FCC F(50/50) field strength versus distance plots shows that values in excess of 110 dBu are rarely present two miles beyond the transmitter. Very few measurements are made at that close-in distance, but we have learned from a canvass of consulting engineers that the 100 dBu level is the most common maximum signal strength.

Table I summarizes the percentage of all US households, rural, urban and suburban, that may be subject to the indicated field strengths or a higher value. The information is presented for VHF-TV stations and separately for the combined contour of both VHF-TV and UHF-TV stations.

Tables II through V list the results of the computer modeling for each ADI and the percentage of households within each ADI that will be subject to the indicated field strength or higher values. At the bottom of the table, the data is aggregated as a percentage and, separately, as a percentage weighted by the number of TV households in each ADI. The resulting percentages represent a prediction relating to the total number of <u>urban and suburban households</u> in the US. (The values given in relation to urban/suburban may be translated to the total US households by using a factor of 0.77 to adjust for the fact that 77% of all US households are in urban/suburban areas.

Figures 1 and 2 are histograms of the data presented in Tables I through V.

Table I

Percentage of All US Households that May Be Subject to at Least the Indicated Field Strength from VHF-TV and/or UHF-TV Stations
(at frequencies below 550 MHz)

	80 dBu	90 dBu	100 dBu	120 dBu
VHF	61.5%	41.3%	19.9%	0.9%
VHF & UHF	65.4%	54.8%	40.8%	6.0%

Table II

DPU Potential Assuming 80 dBu Trigger Value in the Top Ten ADIs (50 to 550 MHz)

Area (ADI)	Total Number of TV Households	Percentage Subject to 80 dBu or Higher: VHF Only	Percentage Subject to 80 dBu or Higher: UHF & VHF
New York	6,760,400	76.9	84.5
Los Angeles	4,962,300	82.2	85.4
Chicago	3,023,600	78.0	87.4
Philadelphia	2,659,700	71.6	81.9
San Francisco	2,236,700	89.0	89.0
Boston	2,121,400	67.9	74.3
Washington	1,812,500	77.0	80.1
Dallas/Fort Worth	1,803,200	82.1	86.4
Detroit	1,728,100	93.8	93.8
Houston	1,465,700	94.3	97.6
Total	28,573,600		
Average Percentage		81.3	86.0
Average Percentage Weighted by Number of TV Households		80.0	85.4

Table III

DPU Potential Assuming 90 dBu Trigger Value in the Top Ten ADIs (50 to 550 MHz)

Area (ADI)	Total Number of TV Households	Percentage Subject to 90 dBu or Higher: VHF Only	Percentage Subject to 90 dBu or Higher: UHF & VHF
New York	6,760,400	45.2	73.6
Los Angeles	4,962,300	60.5	75.5
Chicago	3,023,600	51.1	69.7
Philadelphia	2,659,700	51.4	65.4
San Francisco	2,236,700	44.1	59.3
Boston	2,121,400	46.0	56.9
Washington	1,812,500	61.7	73.3
Dallas/Fort Worth	1,803,200	51.0	79.7
Detroit	1,728,100	73.9	73.9
Houston	1,465,700	73.6	84.1
Total	28,573,600		
Average Percentage		55.9	71.1
Average Percentage Weighted by Number of TV Households		53.7	71.3

Table IV

DPU Potential Assuming 100 dBu Trigger Value in the Top Ten ADIs (50 to 550 MHz)

Area (ADI)	Total Number of TV Households	Percentage Subject to 100 dBu or Higher: VHF Only	Percentage Subject to 100 dBu or Higher: UHF & VHF
New York	6,760,400	26.7	62.3
Los Angeles	4,962,300	14.7	44.0
Chicago	3,023,600	27.0	49.0
Philadelphia	2,659,700	32.2	57.8
San Francisco	2,236,700	34.5	40.9
Boston	2,121,400	13.5	39.4
Washington	1,812,500	34.9	56.6
Dallas/Fort Worth	1,803,200	14.7	61.6
Detroit	1,728,100	41.8	41.8
Houston	1,465,700	33.1	61.9
Total	28,573,600		
Average Percentage		27.3	51.5
Average Percentage Weighted by Number of TV Households		25.8	52.3

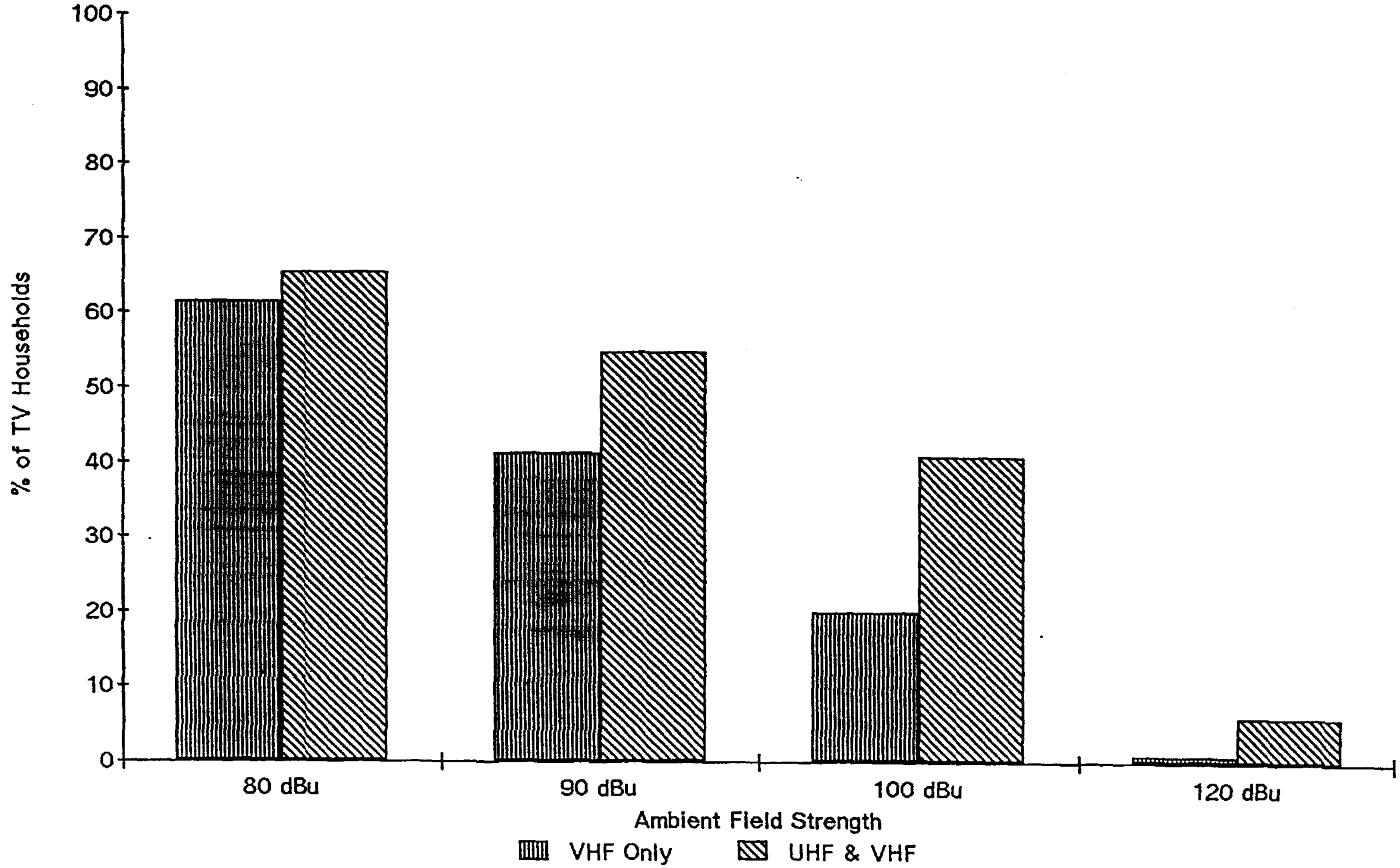
Table V

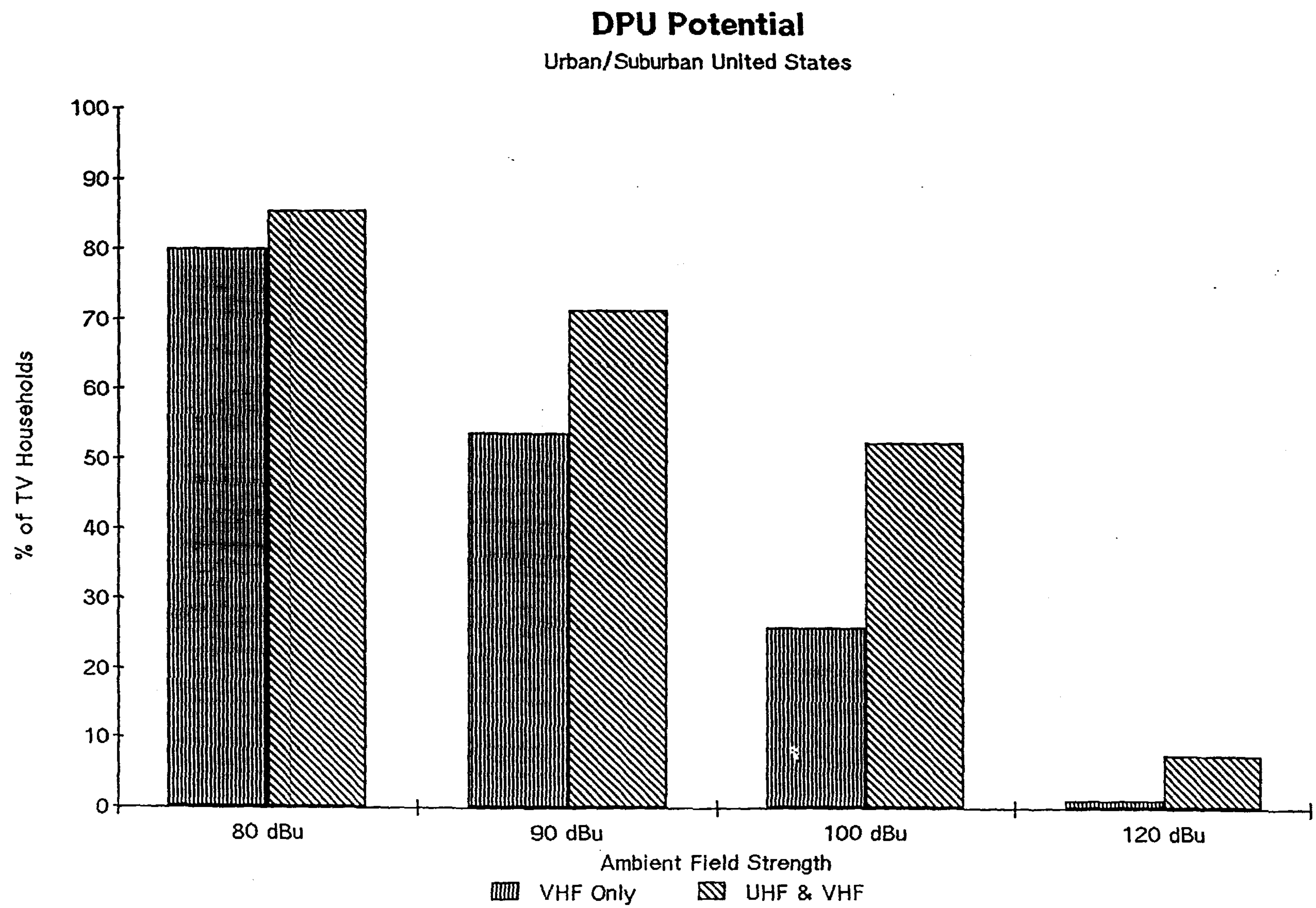
DPU Potential Assuming 120 dBu Trigger Value in the Top Ten ADIs (50 to 550 MHz)

Area (ADI)	Total Number of TV Households	Percentage Subject to 120 dBu or Higher VHF Only	Percentage Subject to 120 dBu or Higher UHF & VHF
New York	6,760,400	0.4	14.3
Los Angeles	4,962,300	0.0	0.0
Chicago	3,023,600	2.0	8.2
Philadelphia	2,659,700	0.8	4.7
San Francisco	2,236,700	6.0	15.5
Boston	2,121,400	0.6	2.8
Washington	1,812,500	2.3	11.0
Dallas/Fort Worth	1,803,200	0.3	7.6
Detroit	1,728,100	1.7	1.7
Houston	1,465,700	0.4	4.6
Total	28,573,600		
Average Percentage		1.5	7.0
Average Percentage Weighted by Number of TV Households		1.2	7.6

DPU Potential

All U.S. Households




DPU Potential
Urban/Suburban United States
% of TV Households
100
90
80
70
60
50
40
30
20
10
0
80 dBu
90 dBu
100 dBu
120 dBu
Ambient Field Strength
VHF Only
UHF & VHF

3.0 Direct Pickup Interference

3.0 Direct Pickup Interference

3.1 Introduction

This Section describes the test methodology and procedures for quantifying the susceptibility of modern television receivers, video cassette recorders (VCR's), and cable converters to Direct Pickup Interference (DPU) and presents DPU test results for a sample of 35 television receivers, 8 VCR's, and 13 cable converters.

DPU is a source of co-channel or in-band interference which occurs as a result of the susceptibility of television receiving equipment to RF ambient fields having in-band components. The primary source of DPU, specific to the reception of cable television, is over-the-air, co-channel television broadcast signals. Other communications signals from fixed and mobile communications transmitters, operating within the same frequency spectrum as that used by the cable delivery system, also contribute to the DPU problem.

Ingress of DPU may occur as a result of inadequate shielding of the tuner stage of the receiver or inadequate isolation of the tuner electronics to currents flowing on the shield of the coaxial input cable or on the AC power cables. The test methodology and procedures presented here address both of these ingress mechanisms.

Section 3.2 provides a discussion of the test methodology used to objectively quantify DPU susceptibility. The DPU test procedures are presented in Section 3.3, and the DPU test results are presented in a tabular and graphic format in Section 3.4.

3.2 Test Methodology

A significant volume of data exists with regard to in-band or co-channel interference to television reception. These data, in general, were derived from subjective tests using both expert and nonexpert viewers. The data are typically presented in terms of an impairment scale, where the abscissa represents the degree of impairment and the ordinate depicts the ratio of the desired signal level to the undesired (interfering signal) level (D/U ratio) as measured at the receiver RF input port. Thus, for a certain type of co-channel interference and a given D/U ratio, it is possible to predict, for example, the resultant impairment to the median television receiver. It is also possible to determine the D/U ratio required to produce "just perceptible" interference for a given percentage of the receiver population.

The DPU test procedures, described here, rely on objective tests to quantify DPU susceptibility in modern receivers. A commonly used measurement technique known as "signal substitution" is used to characterize co-channel DPU interference in terms of a D/U ratio referenced to the receiver RF input port. By referencing DPU interference to the receiver input port, it is possible to take advantage of the body of co-channel subjective test data which exists. Further, this reference location allows for receiver susceptibility performance to be defined at the interface with the cable delivery system.

The DPU test procedure is performed in two steps. First, a calibration signal is input at the receiver RF input port via the input coaxial cable. The calibration signal consists of a desired television signal combined with an interfering signal. The undesired (interfering) signal is an unmodulated (CW) carrier adjusted to a level 55 dB below the desired video carrier level. The 55 dB D/U ratio of the calibration signal is the nominal D/U ratio required to produce "just perceptible" co-channel interference based on subjective test data. The undesired CW signal is input at a frequency between the video and aural carriers where video modulation energy is minimal (approximately 2.55 MHz above the video carrier frequency). Figure 3.1 shows a spectral display of the calibration signal.

A measurement of the resultant undesired (interfering) signal level, within the Equipment Under Test (EUT), is made at the baseband video output port or at an intermediate frequency (IF) test point location. The measured level of the interfering signal at the test point location is the "reference interference level" within the receiver. The measurement location is called the "measurement test point location."

In the second step of the procedure, the interfering signal is removed from the input port of the receiver, and the receiver is irradiated with an ambient field at the same interfering frequency. The level of the ambient field is adjusted until the same "reference interference level" is obtained at the receiver measurement test point location. The field strength required to match the "reference interference level" at the measurement test point location is, therefore, equivalent to an interfering signal source input at the receiver input port which is 55 dB below the desired video carrier level. This is also the field strength required to produce "just perceptible" interference in the receiver, based on subjective test results; and, therefore, represents the threshold of receiver susceptibility.

In a similar manner, the radiated field may be replaced by a conducted current injected on the shield of the input coaxial cable or on the AC power cable. The

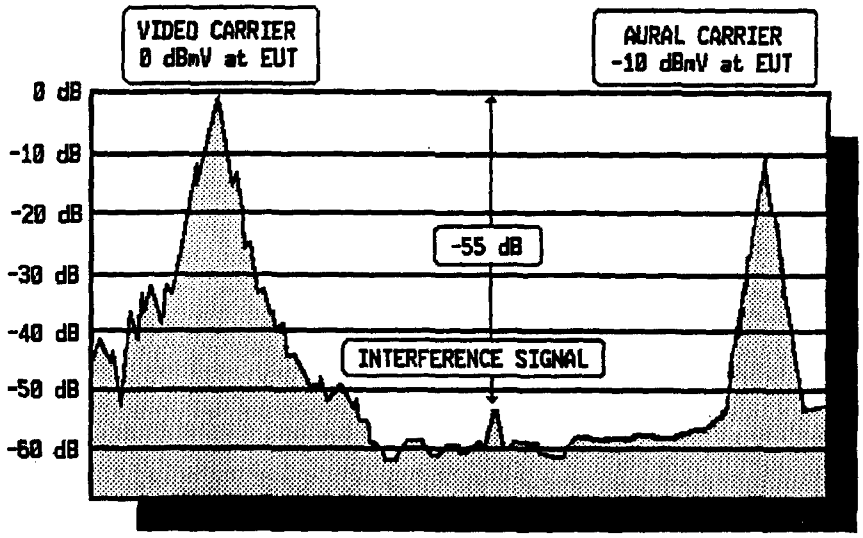


Figure 3.1 Calibration Signal

current is adjusted until the reference interference level is matched at the measurement test point location. The current required to match the reference interference level is equivalent to an interfering signal source at the receiver input port which is 55 dB below the desired video carrier level.

3.2.1 Shielding Effectiveness Figure of Merit

The DPU susceptibility data can be presented in terms of a shielding effectiveness figure of merit for the receiver. The figure of merit is the ratio of the measured field strength (or current) to the input interference signal. The DPU test procedures, contained here, will result in three figures of merit for each test sample; one for radiated susceptibility, one for conducted current susceptibility on the shield of the input cable, and one for conducted current susceptibility on the AC power cable.

In the case of radiated susceptibility, if the figure of merit, field strength, and input interfering signal are expressed logarithmically, the following equation describes the relationship between these quantities:

$$FM = FS - IS \qquad \text{(Eq. 3.1)}$$

Where:

FM = Figure of Merit (dB),
FS = Measured Field Strength (dBmV/m),
IS = Input Interfering Signal (-55 dBmV)

For example, assume that a field strength of 40 dBmV/m (100 mV/m) is required to match the reference interference level at the measurement test point location of the EUT. The shielding effectiveness figure of merit is calculated from equation 3.1 to be 95 dB (40 dBmV/m - (-55 dBmV)).

It is important to note that there is a linear relationship between field strength and interfering signal level within the receiver. For example, if the ambient field strength is increased by 3 dB, the interference level within the receiver will increase by 3 dB. This means that the shielding effectiveness figure of merit is independent of the D/U ratio selected to represent the "just perceptible" interference threshold. If the DPU testing were performed with an input interfering signal at a level of -52 dBmV instead of -55 dBmV, the resultant field strength required to produce the -52 dBmV equivalent interference signal would also increase 3 dB, and the figure of merit for the receiver would remain constant.

As a final example, assume that one wishes to determine the ambient field strength required to produce an equivalent input D/U ratio of 50 dB for a receiver having a measured figure of merit of 95 dB. Solving for field strength in equation 3.1 yields 45 dBmV (177.8 mV/m).

In the case of receiver susceptibility to conducted currents on the shield of the input coaxial cable or on the power cable, the figure of merit is given by the following equation.

$$FM = CC - IS \qquad \text{(Eq. 1.3.2)}$$

Where:

FM = Figure of Merit (dB),
CC = Conducted Current (dBuA),
IS = Input Interfering Signal (-55 dBmV)

In this case, the figure of merit is the ratio of the measured current to the input interference signal level. The examples presented above, for radiated susceptibility, are applicable to conducted susceptibility with field strength replaced by current.

3.2.2 Measurement Test Point Location

The test methodology assumes that the point at which DPU ingress occurs is prior to the first mixer in the receiver tuner stage. This is a logical assumption, since the RF stages of the receiver (prior to the first mixer) are the only stages of the system where the interfering field (or current) represents an in-band signal. After the mixer stage, the desired TV signal is translated to an intermediate frequency (IF), and the interfering ambient field (or current), from this point on, is well outside of the desired video passband. Therefore, the interfering signal will be present, within the video passband, at the IF and detected video stages of the receiver. In the case of a cable converter or VCR, the interfering signal will also be present at the frequency translated RF output.

For those receivers which have a baseband output port (all VCR's and some TV's and cable converters), this port represents a readily accessible measurement test point location to measure the interfering signal level within the receiver. In devices which do not have a baseband output port (most TV receivers and cable converters), a practical alternative must be identified.

Cable converters have an RF output port where the output channel is frequency translated with respect to the input channel. The interfering signal, appearing at the converter output port, represents the interference received by the converter and passed on to the next device. Since the interfering signal is readily measurable at this location, using a spectrum analyzer, the RF output port is selected as the measurement test point location for cable converters.

TV receivers typically have no baseband or RF output ports. In this case, a probe must be inserted in the TV receiver to bring an IF signal or baseband video signal to the exterior of the chassis. The probe must have impedance characteristics which do not adversely affect the functionality of the receiver; however, the actual receiver circuit impedance at the probe location is not critical since only relative measurements will be made at this location. Circuit schematics are generally required with each test item to identify a suitable test point location within the IF stage or detected video stage of the receiver.

As a final note on this subject, selecting a test point at a location translated in frequency from the impinged interfering field insures that the test cables and probes used to measure the interfering signal will not pickup and/or induce additional in-band components into the receiver electronics.

3.2.3 Desired and Undesired (Interfering) Test Signals

DPU susceptibility is performed with an actual television test signal input on the desired channel. By using a television test signal, all of the electronic circuits within the EUT, including the AGC and AFC circuits, will be active and operating under normal conditions. The input level of the desired video carrier is set for the minimum level delivered by a cable system (0 dBmV). The video carrier is modulated with a 0 IRE or 10 IRE flat field modulation. The aural carrier is unmodulated and adjusted for a level 10 dB below the desired video carrier level.

The undesired (interfering signal) is an unmodulated CW carrier. Prior testing has shown that across the video passband of a test channel, the tuner shielding effectiveness figure of merit is constant. This means, for example, a 100 mV/m ambient field strength at a frequency 0.5 MHz above the desired video carrier will produce the same interfering signal magnitude at the output of the tuner as a 100 mV/m ambient field strength at a frequency 2.5 MHz above the desired video carrier frequency. Therefore, for each test channel, only a single interfering frequency is required. The frequency of the undesired (interfering) signal is selected between the video and aural carrier frequencies (2.55 MHz above the video carrier frequency) where video modulation energy is minimal and maximum dynamic range is obtained.

Based on prior subjective testing, D/U ratios on the order of 45 to 70 dB produce co-channel "just perceptible" interference in modern receivers; ambient field strengths in the range of 1 mV/m to 3 V/m will be required to produce this level of interference in the range of devices to be tested.

3.2.4 Test Channels

Four standard test channels were chosen to represent receiver DPU susceptibility performance to radiated ambient fields. Three of the channels were selected in the standard cable band between 54 and 550 MHz. One additional channel was chosen above the presently used cable spectrum in anticipation of expanding into this band. Since most receivers do not tune to cable channels above 550 MHz, a broadcast channel was selected as the final test channel. The four standard test channels are:

CHANNEL	FREQUENCY
6	82 - 88 MHz
12	204 - 210 MHz
78	546 - 552 MHz
59 (BROADCAST)	740 - 746 MHz

DPU receiver susceptibility to conducted currents flowing on the shield of the input coaxial cable and on the AC power cable will be tested at channel 6 and channel 12, only.

3.2.5 Test Facility and Test Configuration

Since relatively high field strengths are required to perform DPU receiver susceptibility testing, a shielded test chamber is required. Use of a shielded test chamber insures that the radiated fields from the DPU test facility do not interfere with other licensed communications facilities in the vicinity and that ambient external fields do not interfere with the DPU testing. It is recommended that an anechoic or semi-anechoic chamber be used. A TEM cell may also be used to perform DPU radiated susceptibility testing, provided it has UHF frequency capability, it is of sufficient size to handle large television receivers, and it has special provisions to rotate the EUT through a 360 degree arc.

The DPU tests conducted at Carl T. Jones Corporation were performed in a 12-foot x 16-foot semi-anechoic shielded enclosure. Fifty blocks of anechoic RF absorptive material were installed in the enclosure to achieve the field uniformity requirement for the test.

The DPU test facility must be capable of producing ambient, horizontally polarized field strengths up to 3 V/m at each of the test frequencies. Field uniformity at each test frequency must be less than ±4 dB over a cubic test volume, 2.5 feet on a side. Figures 3.2 and 3.3 show the equipment configurations for performing the field strength and field uniformity calibration measurements within the test chamber.

Figure 3.4 shows a typical radiated susceptibility test configuration. The EUT is placed on a non-metallic rotatable table, 0.9 meters above the ground plane of the test chamber. The table must be capable of rotating the EUT through a 360 degree arc in order to establish the orientation of maximum susceptibility. Generator #1 in Figure 3.4 is the desired TV signal generator (baseband TV signal generator and agile channel modulator). Generator #2 is the undesired (interfering) signal generator (a calibrated signal source feeding a power amplifier). A broadband biconical or log periodic antenna connected to the output of generator #2 is used to create the ambient field at the EUT.

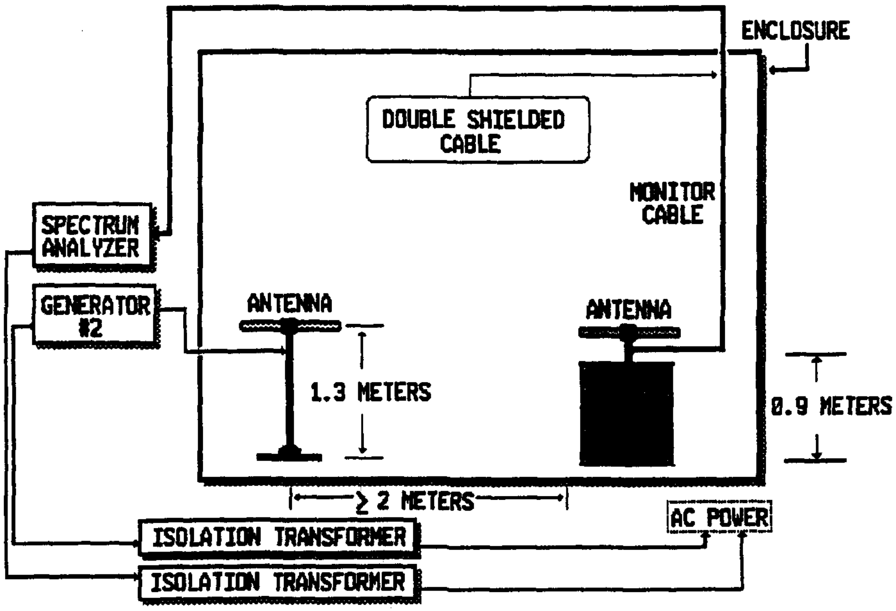


Figure 3.2 Test Chamber Field Strength Calibration Configuration

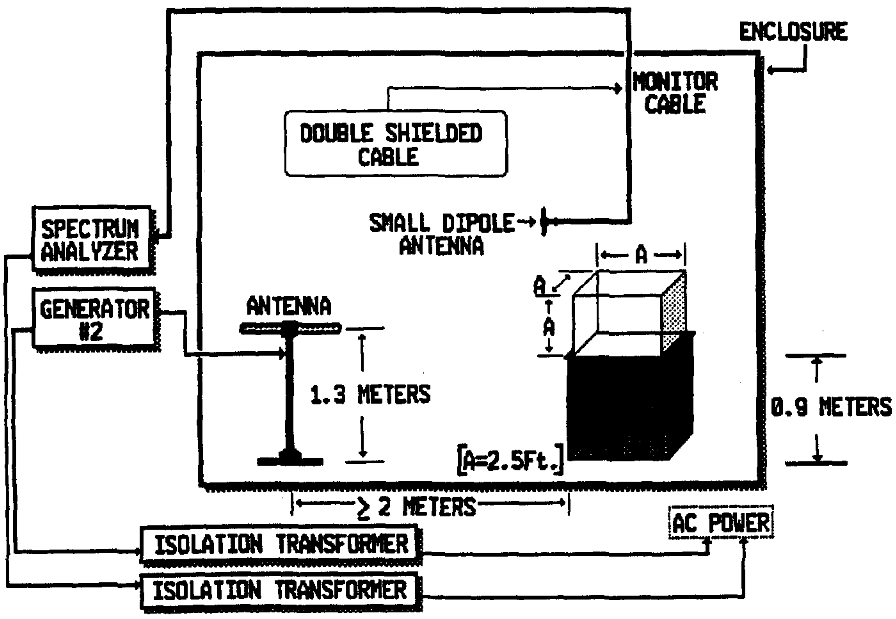


Figure 3.3 Test Chamber Field Uniformity Calibration Configuration

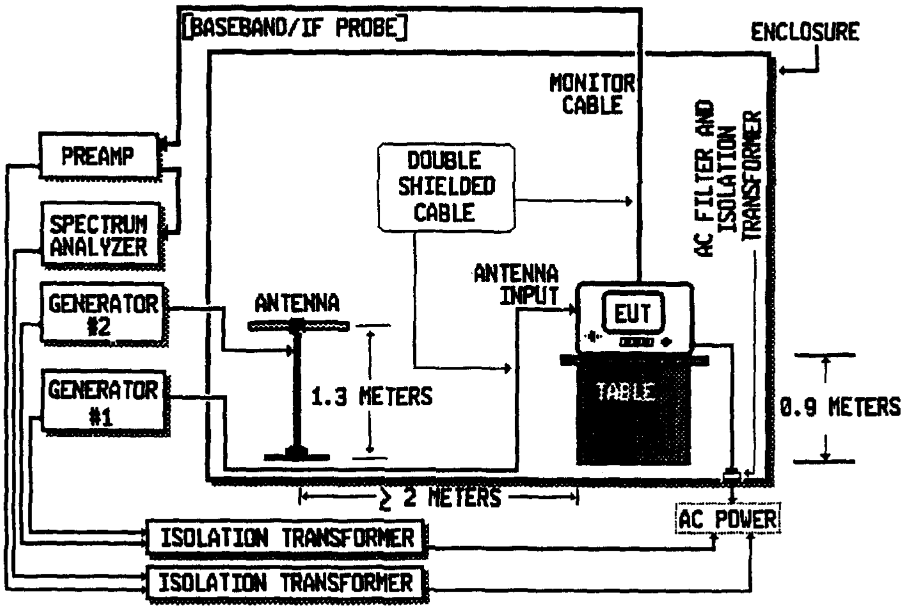


Figure 3.4 Radiated Susceptibility Test Configuration

Figure 3.5 shows the test configuration for the conducted current susceptibility test. For this test, the transmit antenna is replaced by a current injection clamp on the input coaxial cable. A current probe, also located on the input cable and immediately adjacent to the EUT chassis, is used to measure the current flowing on the shield at the input port. This test is repeated with the injection clamp and current probe placed on the AC power cable.

3.3 DPU Test Procedures

This Section provides detailed test procedures for radiated and conducted current DPU susceptibility testing.

3.3.1 General Test Conditions

For all calibration and test procedures, the EUT and test equipment will be properly impedance matched (the one exception is the high impedance IF probe).

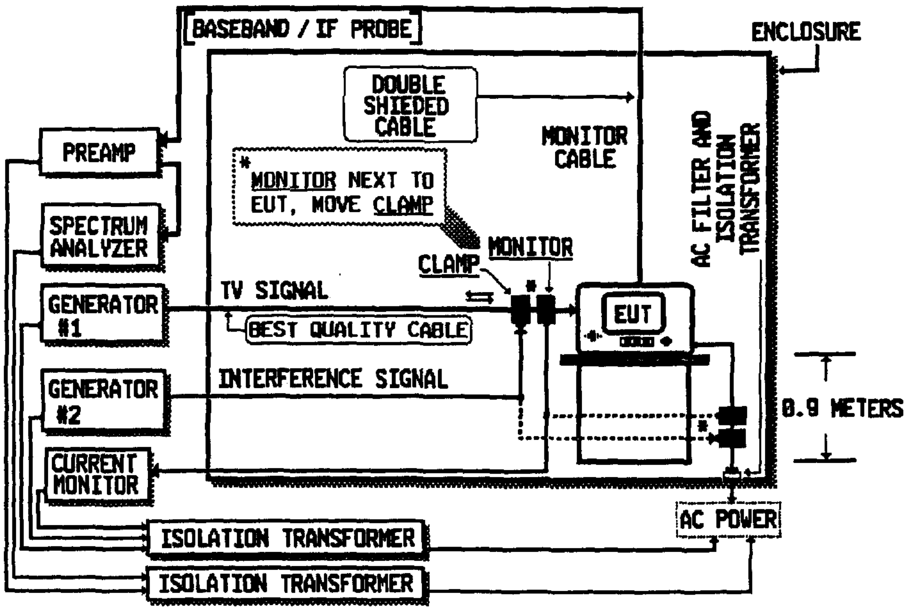


Figure 3.5 Conducted Current Susceptibility Test Configuration

All cable losses, attenuator losses, amplifier gains, and combiner losses will be measured and recorded for each test frequency. When appropriate, additional amplification and/or filtering may be used to improve measurement system performance. All calibrated signal inputs to the EUT, transmitting antenna, and current injection clamp will be referenced to a calibrated signal source output setting and/or generator output attenuator setting. Calibrated signal generators will be verified for accuracy using a NIST traceable calibrated power meter.

The measurement of the level of the desired video input carrier will be performed with a spectrum analyzer processing bandwidth of 300 kHz or greater and no video filtering. All other relative signal levels will be referenced to the peak sync tip of the desired modulated video carrier. Narrower processing bandwidths and video filtering or averaging may be used when measuring unmodulated (CW) interfering signals.

3.3.2 DPU Test Chamber Calibration

At each test frequency, the DPU test chamber is calibrated to verify field uniformity and to establish the interference signal generator output level required to produce a radiated field of 3 V/m at the EUT location. These tests are performed using the same transmitting antenna, and configuration, as used for the actual radiated susceptibility test. The transmit and receive antennas used in the calibration process are broadband biconical dipole or log periodic antennas. Tests are performed using horizontal polarization only. A step-by-step procedure for performing the DPU test chamber calibration follows.

STEP #1 Configure the test chamber and test equipment as shown in Figure 3.2. Center the horizontally polarized broadband receive antenna within the test volume to be occupied by the EUT. The test chamber calibration frequencies (DPU interfering frequencies) are:

TEST CHANNEL	CALIBRATION FREQUENCY
6	85.8 MHz
12	207.8 MHz
78	549.8 MHz
59 (BROADCAST)	743.8 MHz

STEP #2 Set signal generator #2 to the first calibration frequency and center the spectrum analyzer display for that frequency. Adjust the output level of generator #2 until a signal is observed on the spectrum analyzer display. Rotate the receive antenna to maximize the received power level. Continue to adjust the output level of generator #2 until a field strength of 3 V/m is obtained on the receive antenna (taking into account the cable loss and antenna factor for the selected calibration frequency). Record the generator output level.

STEP #3 Replace the broadband dipole receive antenna with a small, horizontally polarized, dipole (or equivalent) receive antenna as shown in Figure 3.3. With the small dipole antenna located at position #1 (Figure 3.6) and generator #2 set for 3 V/m (STEP #2 above), measure the relative field strength on the spectrum analyzer. Repeat this measurement for each of the remaining antenna positions shown in Figure 3.6. Record the field uniformity test results onto a data sheet.

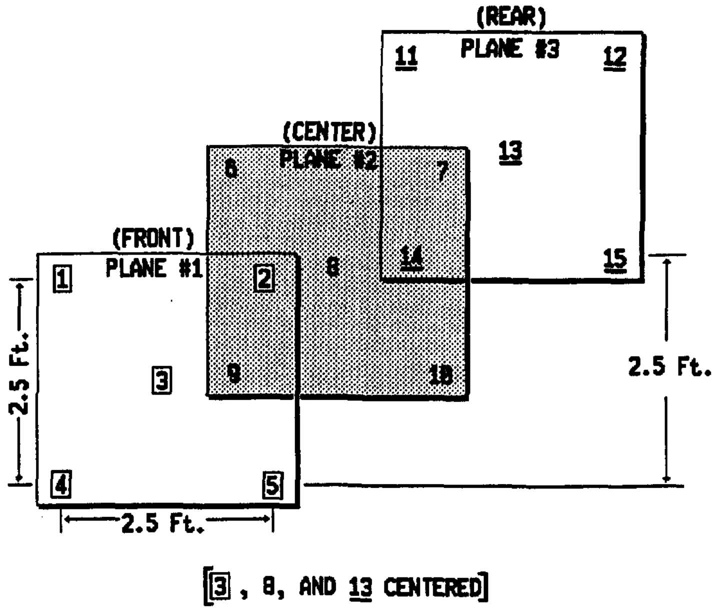


Figure 3.6 Field Uniformity Test Points

STEP #4 Verify that the relative volumetric field uniformity measurements comply with the ±4 dB field uniformity requirement.

STEP #5 Repeat STEPS 2 through 4 for the remaining three test frequencies.

3.3.3 Radiated and Conducted Current Susceptibility Calibration Procedure

As was discussed in Section 3.2, the first step in the DPU susceptibility measurement procedure is to input a calibrated reference signal, via the coaxial input cable, consisting of a desired television signal combined with an interfering signal. The undesired (interfering) signal is an unmodulated (CW) carrier adjusted to a level 55 dB below the desired video carrier level. The "reference interference level" is then measured at the measurement test point location.

In the case of a TV receiver monitored at an IF test point, the "reference interference level" will be measured using a high impedance probe. Figure 3.7 shows a typical IF test probe. Since the local test point ground may be different from earth ground, it is important that an isolation transformer be used to power the EUT. A step-by-step procedure to perform the DPU radiated and conducted current susceptibility calibration follows.

STEP #1 Configure the TV signal generator (generator #1) and the interfering CW signal generator (generator #2) as shown in Figure 3.8. Configure the EUT and test equipment as shown in Figure 3.9.

STEP #2 Allow a 15 minute warm-up time for test equipment and EUT and verify proper operation.

STEP #3 Set the channel modulator to the first test channel. Modulate the desired video carrier with a 0 IRE or 10 IRE flat field modulation, and set the level of the video carrier to 0 dBmV at the input to the EUT. Adjust the level of the unmodulated aural carrier to -10 dBmV. The video and aural carrier frequencies for the four test channels are:

TEST CHANNEL	VIDEO CARRIER	AURAL CARRIER
6	83.25 MHz	87.75 MHz
12	205.25 MHz	209.75 MHz
78	547.25 MHz	551.75 MHz
59 (BROADCAST)	741.25 MHz	745.75 MHz

STEP #4 Adjust the interfering signal generator (#2) for the desired interfering frequency for the first test channel (see table below for interfering frequencies). Adjust the output level of the generator to produce an interfering signal at the input to the EUT which is 55 dB below the desired video carrier level. Record the generator output setting.

TEST CHANNEL	INTERFERING FREQUENCY
6	85.8 MHz
12	207.8 MHz
78	549.8 MHz
59 (BROADCAST)	743.8 MHz

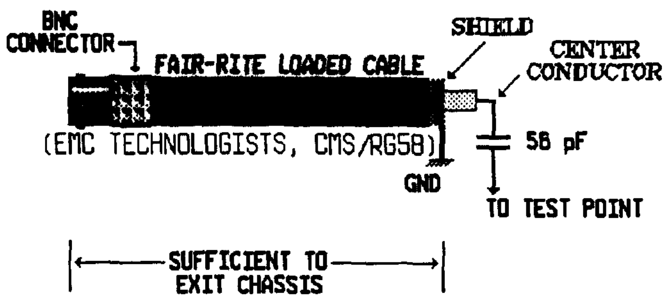


Figure 3.7 IF Monitor Test Probe (Equivalent)

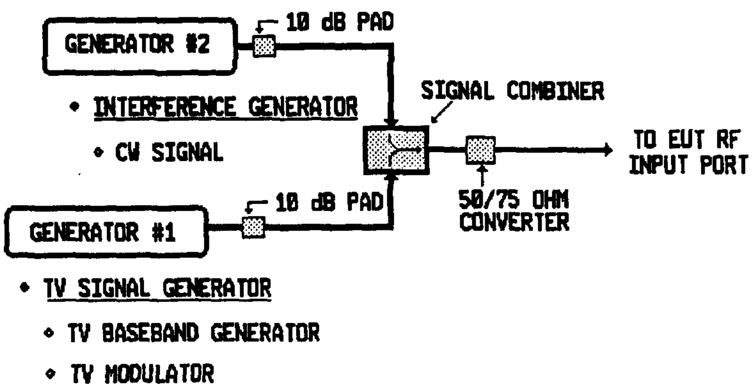


Figure 3.8 Radiated Susceptibility Calibration Generator Configuration

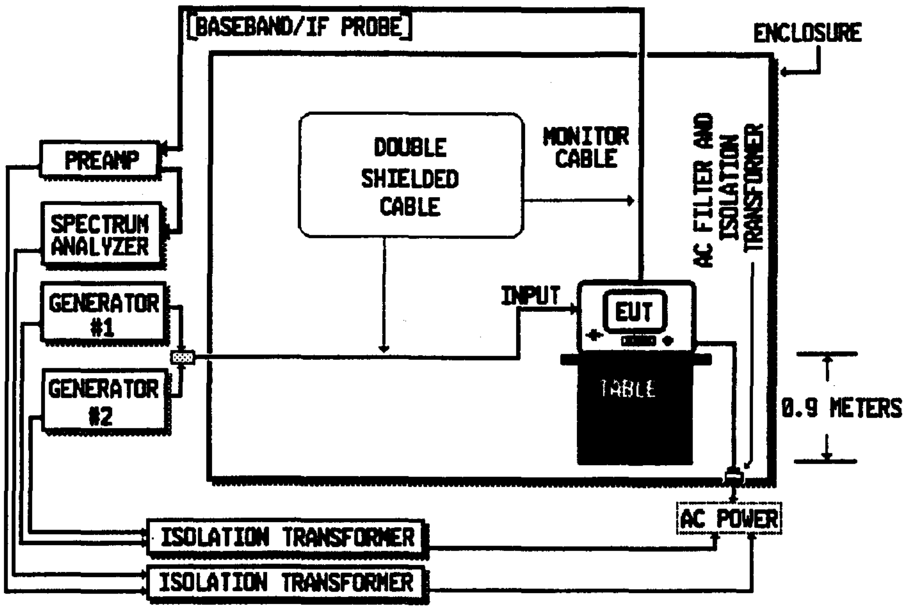


Figure 3.9 Radiated Susceptibility Equipment Calibration Configuration

STEP #5 Attach the monitor cable to the measurement test point location. Adjust the spectrum analyzer display to view the reference interference signal. If a baseband video measurement point location is being monitored, the reference interference signal will appear at a frequency of 2.55 MHz in the baseband spectral display. If an IF test point is being monitored, the reference interference signal will appear at a frequency of 43.2 MHz in the IF spectral display. If an RF output port is being monitored, the reference interference signal will appear 2.55 MHz above the output channel visual carrier frequency.

STEP #6 Record on a data sheet the reference interference signal level measured at the measurement test point location. This is the reference level which will be matched in the radiated and conducted susceptibility tests.

STEP #7 Repeat STEPS 3 through 6 for the remaining three test channels.

3.3.4 Radiated Susceptibility Test Procedure

For the radiated susceptibility test procedure, the interfering signal is removed from the EUT input and connected to the transmit antenna. The field strength is adjusted until the interference signal, as measured at the measurement test point location, is equal to the "reference interference level."

In order to minimize radiated field pickup and resulting current flow on the input coaxial cable shield, the monitor cable shield, and the power cable, these cables should be vertically oriented (cross polarized to the radiated field) as much as practical in the test chamber. Conduit may also be used between the wall of the chamber and the base of the rotatable table to encase the input and monitor cables. A step-by-step procedure for performing the DPU radiated susceptibility test is presented below.

STEP #1 Reconfigure the test equipment and EUT as shown in Figure 3.4, connecting the interference generator (#2) output to the RF amplifier and transmit antenna. Configure the test generators as shown in Figure 3.10.

STEP #2 Adjust the interference signal generator (generator #2) output level so that the ambient field strength is sufficient to produce a detectable DPU interfering signal at the EUT's measurement test point location (do not exceed a field strength of 3 V/m). Rotate the EUT through 360 degrees while monitoring the interfering signal level on the spectrum analyzer. Stop at the EUT orientation which produces the maximum interference signal and record this orientation. This is the orientation of maximum radiated susceptibility of the EUT.

STEP #3 Adjust the interfering signal field strength (generator #2) to obtain (match) the "reference interference level" recorded in STEP #6 of the Calibration Procedure. Record the output level of the interference signal generator.

[**Note:** Should a field strength greater than 3 V/m be required to match the reference interference level, record the interfering signal amplitude at the EUT's monitor point for a field strength of 3 V/m.]